CLAIMS

1. Method for the separation according to size of particles (40, 42) with different sizes, immersed in a liquid, this method including:

- introduction of radiation (30) in a waveguide (20), coupled to a second guide in a coupling area, this radiation entraining all particles towards the coupling area,
- separation of the particles as they pass into the coupling area.

2. Method according to claim 1, the distance between the two guides in the coupling area being less than 5 µm.

3. Method according to either claim 1 or 2, the length of the coupling area being between 10 µm and 50 µm.

4. Method according to one of claims 1 to 3, the particles being cells or macromolecules or microballs.

5. Method according to one of claims 1 to 4, the injected radiation being in a spectral range between the near ultraviolet and the infrared.

6. Method according to one of claims 1 to 3, the particles being microballs, and microball marked cells, and the radiation being in the infrared range.

7. Method according to one of claims 1 to 6, the diameter of the particles being between firstly 100 nm and 500 nm, and secondly between 600 nm and 1.5 µm or between 1 µm and 100 µm.

8. Method according to one of claims 1 to 7, the liquid in which the particles are immersed being water or a cell suspension medium.

9. Method according to one of claims 1 to 8, some particles being metallic or being marked by metallic particles.

10. Method according to claim 9, some particles being gold particles or being marked by gold particles.

11. Method according to one of claims 1 to 10, the radiation injected in the waveguide being polarised in transverse magnetic mode.

12. Particle separation device, comprising two optical guides (20, 22) coupled by a coupling area with a length between 10 µm and 50 µm, the distance between the guides being between 500 nm and 5 µm.

13. Device according to claim 12, also comprising means (162) of sending radiation with a wavelength of between 300 nm and 1.2 µm or even 1 µm and 1.2 µm in one of these guides.

14. Device according to either claim 12 or 13, also comprising means (162) of sending radiation polarised in transverse magnetic mode in one of these guides.

15. Device according to one of claims 12 to 14, also comprising means (160, 170) of displaying separation of particles.